

REMARKS/ARGUMENTS

Claims 1, 2, 4-11, and 15-35 are pending in the present application. Claim 23 has been amended to more particularly claim the inventive method. Claims 1-16 and 29-31 are cancelled. The amendment is supported at, for example, paragraph [0012] of the specification. Applicants appreciate the Examiner's courtesy in the telephone interview of May 19, 2003 and for the indication of allowable subject matter in claims 20 and 21.

Claims 1, 2, 4-9, 29, and 30 stand rejected under 35 U.S.C. § 112, first paragraph. Claims 1, 7-11, and 29-31 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,348,755 to Roy (hereinafter "Roy"). Claims 1, 2, 4-11, 15, 16, and 29-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,114,162 to Kashiba. Claims 6, 15, and 16 stand rejected under 35 U.S.C. § 103(a) as being obvious over Roy. Claims 1, 6-11, 15, 16, and 29-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 5,626,820 to Kinkead et al. These rejections are moot as claims 1-16 and 29-31 have been cancelled.

The present invention, as covered in the remaining claims, is directed to a method of removing impurities from an aqueous system. The method includes the steps of providing an activated carbon composition that includes a carboxylic acid material adsorbed onto the surface of an activated carbon, and passing an aqueous stream through the activated carbon composition. The pH of the aqueous stream deviates less than 1 pH unit after passing through the activated carbon composition.

Claims 23, 25-28, 34, and 35 stand rejected under 35 U.S.C. § 112, first and second paragraphs, as being indefinite. The Examiner indicates that the claims do not include

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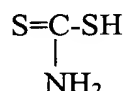
the limitation that the pH of the aqueous stream deviates less than 1 pH unit after passing through the activated carbon composition. Claim 23 has been amended to include the limitation suggested by the Examiner. Therefore, the rejection of Claims 23, 25-28, 34, and 35 under 35 U.S.C. § 112, second paragraph, should be withdrawn.

Claims 17, 23, and 28 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,437,797 to Helmig (hereinafter "Helmig"). Claims 1, 2, 4-6, 9-11, 15, 16, 18, 19, 22, 24, 25, and 28-35 stand rejected under 35 U.S.C. § 103(a) as being obvious over Helmig.

Helmig discloses a method for removing organic and inorganic mercury contaminants from a biological vaccine production facility. The method includes filtration through one or more molecular sieve filters providing pore sizes from about 100 millimicrons to about 1 millimicron, adjusting the pH of the effluent stream to about 6 or below if it is above pH 6, decolorizing the effluent stream with activated carbon, and removing both organic and inorganic mercury compounds with a macroporous, cross-linked polystyrene chelating resin having polyisothiuronium functional groups. To aid in mercury removal, the activated carbon may be impregnated with dithiocarbamic acid.

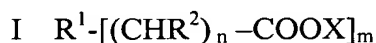
The Examiner cites the disclosure by Helmig that the activated carbon may be impregnated with dithiocarbamic acid as anticipating or rendering obvious the presently claimed method of passing an aqueous stream through an activated carbon composition that includes a carboxylic acid material adsorbed onto the surface of an activated carbon.

The use of dithiocarbamates is well known to precipitate metals such as Cd, Co, Cu, Hg, Pb, Zn, and Ni (see, for example, U.S. Patent No. 5,342,449 to Holbien et al.). Dithiocarbamic acid has the following structure:



Paragraph [0021] of the present specification describes the carboxylic acid containing compounds used in the present invention as follows:

The carboxylic acid containing compound can be any carboxylic acid containing compound, or its corresponding salts, that will effectively prevent pH excursions during the start-up phase of an aqueous treatment system using the activated carbon composition of the present invention. Preferred carboxylic acid containing compounds can be described by general formula I:



Where R^1 can be any $\text{C}_1 - \text{C}_{12}$ alkyl, alkenyl, alkynol, alkylamine or aryl; R^2 can be $-\text{H}$, $-\text{OH}$, or $\text{C}_1 - \text{C}_6$ alkyl, alkenyl, alkynol, alkylamine or aryl; X is $-\text{H}$, Li^+ , Na^+ , K^+ , Mg^{+2} , Ca^{+2} , NH_4^+ , Fe^{+2} , Fe^{+3} , Cu^+ or Cu^{+2} ; n is an integer from 0 to 12; and m is an integer from 1 to 20. For each occurrence of m, R^2 , n and X can be the same or different.

Clearly, Helmig does not disclose the activated carbon composition that includes a carboxylic acid material adsorbed onto the surface of an activated carbon used in the presently claimed invention. Dithiocarbamates are non-analogous species to the carboxylic acid materials used in the present invention. As the Examiner agreed in the telephone interview of May 19, 2003, a disclosure of only activated carbon impregnated with dithiocarbamic acid would not anticipate or render obvious the presently claimed activated carbon composition that includes a carboxylic acid material adsorbed onto the surface of an activated carbon, where an aqueous

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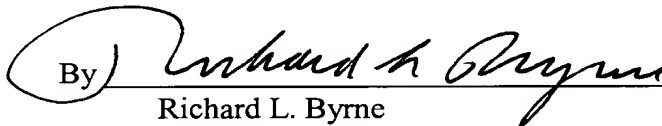
stream passing through the activated carbon composition experiences a pH deviation of less than 1 pH unit after passing through the activated carbon composition.

As Helmig does not anticipate or render obvious the method of claims 17-28 and 32-35, the rejection of these claims under 35 U.S.C. §§ 102(b) or 103(a) should be withdrawn.

In view of the above amendments and remarks, reconsideration of the rejections and allowance of claims 17-28 and 32-35 are respectfully requested.

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